UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,802	06/26/2003	Mats Leijon	66291-351	2804

7590 10/31/2003

John P. DeLuca
Watson Cole Grindle Watson, P.L.L.C.
Suite 1000
1400 K Street, N.W.
Washington, DC 20005-2477

EXAMINER	
MULLINS, BURTON S	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/603,802	LIEJON, MATS	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-70* is/are rejected.

7)☒ Claim(s) *32-70* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *08/973,019* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "insulated/uninsulated" conductive elements (claim 39), the "discontinuously decreasing radius as the slot radius decreases" (claim 44), the "plurality of system voltage levels" (claim 56), the "plurality of separate tappings configured to connect to different system voltage levels" (claim 57), the "separate windings" (claim 58), "plurality of electrical systems of different voltages" (claim 59) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 62-63 are objected to because of the following informalities: In claims 62 and 63, change "outer" to -outermost-.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 32-70 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 32, the recitation "a high-voltage stator winding configured to operate in an inclusive range of above 36 kV through a system voltage of a power network" constitutes new matter because it narrows the scope of the claimed high voltage machine to a range bounded by a lower limit of 36 kV. This lower limit is not synonymous with that defined by the original disclosure. The specification defines high voltage as "voltages exceeding 10 kV and up to the voltage levels which occur for power networks" (p.17, lines 11-13) and further states that "[t]he invention is generally applicable to rotating electrical machines for voltages exceeding 10 kV" (p.21, lines 7-8). Thus, the disclosed lower limit of applicant's high voltage machine is 10 kV, not 36 kV. There is nothing in the original disclosure which would prompt one of ordinary skill to choose 36 kV as the lower limit in the claimed range.

Applicant points out that support exists at p.5, line 34-p.6, line 6, p.6 lines 8-14, page 9 lines 12-21, and p.14 lines 29-32, and that the presently claimed range of "above 36kV through a system voltage of a power network" clearly lies within the above-noted disclosed range. While this range does lie within the originally disclosed range of "voltages exceeding 10 kV" as defined at p.21, lines 7-8, it also presents a subset or species which was not originally disclosed. The prior art described has different maximum voltage levels, e.g., 25-

30 kV (p.6, line 14), 20 kV (p.6, line 24), power network voltages (p.8, lines 13-15), or up to 36 kV (p.9, line 13). Even if applicant is correct in assuming that one of ordinary skill could infer support based on the prior art for a range limit, how would one of ordinary skill choose the specific range limit of 36 kV when the limits on the disclosed prior art cover the range of 20 kV through power network voltages?

Applicant cites Wertheim, 191 USPQ 90, (CCPA 1976) which found that specific suggestions of particular values of 36% and 50% along with an overall range of 25-60% were sufficient to support a subsequent claim with a range of 35-60% that was not literally set forth in the original specification. However, in Wertheim, specific examples were described in the specification. In applicant's specification, although specific ranges of the prior art are described, no specific ranges of applicant's invention are described except that of "voltages exceeding 10 kV." Thus, as far as defining a range for the term "high voltage" in the present case, one of ordinary skill in the art would be presented with the choice of either inferring a lower limit from a number of conflicting ranges disclosed in the prior art, or relying upon the clear disclosure in applicant's description that defines the range as being between 10 kV and power network voltages.

5. Claims 32-70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 32, 49, 55, 60 and 61, the statement "in an inclusive range of above 36 kV through a system voltage of a power network" is indefinite and contradictory because it is not clear whether 36 kV is included or excluded from the claimed range of "36 kV through a system voltage of a power network". The use of the term "inclusive" suggests

that 36 kV comprises and is included in the lower limit of the range, while use of the phrase "above 36 kV" suggests that the 36 kV value is excluded from the range.

6. Claims 58 and 68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 58, "each separate winding" is vague and indefinite. What defines a "separate" winding? Does this refer to each winding in each slot? Or to a winding wound in more than one slot? In claim 68, recitation "free of...field control" is vague and indefinite.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 32-37, 40-41, 45-46, 49-50, 52-53, 55, 59-64 and 66-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laffoon (US 1,891,716) in view of Elton (US 4,853,565). Laffoon teaches a high voltage rotating electric machine comprising: a stator winding which is insulated to allow for high voltage operation (e.g., 33,000 or 66,000 volts) and direct connection of the machine to the network, i.e., "in an inclusive range of above 36 kv through a system voltage of a power network" (p.1, lines 39-50).

Laffoon does not teach that the high-voltage winding is: 1) flexible, and 2) comprises a current-carrying conductor, an inner layer having semi-conducting properties surrounding and being in electrical contact with said current-carrying conductor, a solid insulating layer

surrounding and contacting the inner layer, and an outer layer having semi-conducting properties surrounding and contacting the solid insulating layer.

Elton teaches a high-voltage, electrical cable 100 (Fig.7) comprising current-carrying conductors 102; an inner, semi-conducting "grading" layer 104 made of pyrolized glass fibers (c.7, lines 19-20) surrounding and being in electrical contact with the current-carrying conductor 102; a solid insulation layer 106 surrounding and contacting the inner layer; and an outer layer 110 having semi-conducting properties surrounding and contacting the solid insulating layer 106, as well as being in contact with ground, to thus bleed off static charge and thus prohibiting development of corona discharge (c.7, lines 23-28; lines 64-68).

Regarding the issue of cable "flexibility", Elton's windings 50 "initially extend axially and then bend circumferentially so as to provide a connection between one bar and a second circumferentially disposed bar in the stator core" (c.5, line 67-c.6, line 4). The manner of bending is shown in Fig.5. Thus, adequate "flexibility" is provided by such a bend. Also, Elton's teaching at c.8, lines 3-9 that "the semi-conducting layer is a glass fiber which can be chopped, mixed with resin and molded, or blown on any complex shaped substrate [so that] the layer can be placed in intimate contact with substantially all of the exterior surface of the insulator or housing..." suggests that the semi-conducting layer can be "molded" or "blown" onto a cable without causing cable rigidity. Finally, Elton refers to US 4,510,077 (Elton '077), incorporated by reference therein, for a detailed description of the characteristics of the cable material. Elton '077 teaches that a lubricant may be used in the material "to impart lubrication to and between the individual glass fibers, and as such permits the threads and cloths manufactured from these fibers to be subjected to mechanical stresses as incurred by

bending, folding and twisting without breakage of the fibers" (c.4, lines 8-16). Thus, Elton '077 teaches how to make the semi-conductive material flexible.

It would have been obvious to one having ordinary skill to modify Laffoon's high voltage machine winding and provide a flexible, high voltage, electrical cable per Elton et al. with grounded inner and outer semi-conductors separated by an insulator since such a cable would have been desirable to prohibit development of corona discharge.

Regarding independent claim 49, Laffoon teaches direct connection of his high voltage generator at normal distribution voltages, i.e. "system voltages", such as 33,000 or 66,000 volts (p.1, lines 39-50). Note also stator core 2.

Regarding independent claim 55, note rotor 1 opposite the stator core 2.

Regarding independent claim 60, since Laffoon and Elton teach applicant's apparatus, the method of making the apparatus including the steps of "configuring" and "threading" the cable is inherent.

Regarding independent claim 61, Elton's cable layers 104/106/110 (Fig.7) form an "electric field confining cover" surrounding the current-carrying conductor/s 102 and form a full, uninterrupted turn as seen in Fig.5.

Regarding claims 33-34, Elton's inner "grading" layer 104 has substantially a same potential as the conductor 102 since it "equalizes the electric charge about conductive strands 102" (c.7, lines 21-22); and outer layer 110 forms an equipotential surface surrounding the conductor. Regarding claims 35-36, a predetermined reference potential or "node", including ground, may be coupled to the semi-conducting layer (c.8, lines 13-21). Regarding claim 37,

since the semi-conductive layers have different levels of resistivity (c.8, lines 27-28), it can be inferred that separate potentials would be chosen for separate windings

Regarding claim 40, Elton's inner and outer layers 104/110 have respective inner and outer contact surfaces (not numbered, Fig.7) and are secured to the solid insulating layer 106 along substantially an entire length of each corresponding contact surface, since the cable extends axially within slots in the stator core.

Regarding claim 41, Laffoon's stator 2 is laminated (p.2, line 20).

Regarding claims 45 and 66, since Laffoon and Elton disclose a stator cable structure identical to applicant's claimed cable structure, the operation of Laffoon and Elton's cable "at 100% overload for a period of time from about 15 minutes to about two hours" would be inherent.

Regarding claim 46, Laffoon teaches "direct connection" to the distribution network at 33 or 66 kV levels. This "direct connection" would not require transformers.

Regarding claim 47, "means for controlling a magnetic field flow through the rotor" are inherent to any dynamo-electric machine and could include e.g., the inductance of the stator windings themselves.

Regarding claim 48, generators are operated on a network to compensate for inductive or capacitive loads.

Regarding claim 50, note the magnetic circuit formed by rotor 1 and stator core 2 in Laffoon, as well as the rotor (inherent) and stator of Elton's machine (Fig.5).

Regarding claim 52, since Laffoon and Elton disclose a stator cable structure identical to applicant's claimed cable structure, with the outer layer of Elton 110 in contact with the

stots, in operation the electric field of the machine outside the outer semi-conducting layer in the slots and in an end winding region would be near zero.

Regarding claim 53, the conductors in Laffoon and Elton are transposed (Laffoon, p.2, lines 31-32; Elton, Fig.6, c.6, lines 49-60).

Regarding claim 59, Laffoon's direct-connection would inherently provide "means for permitting exchange of electric energy between a plurality of electrical systems of different voltages", i.e., the machine operating at 33-66 kV, and the grid, which can operate at greater than 66 kV.

Regarding claim 62, the outermost layer 110 in Elton is in electrical contact with the stator (Fig.2).

Regarding claim 64, Elton's plurality of layers are substantially free of cavities and pores.

Regarding claims 67-70, Elton's cable is operable free of end winding loss since the semi-conducting layers provide equal potentials about the end regions of the windings (c.7, lines 6-7). Elton's cable is free of partial discharge and comprises multiple uninterrupted turns (Fig.5).

9. Claims 38 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laffoon and Elton as applied to respective claims 32 and 61 above, and further in view of Elton et al. (US 4,622,116). Laffoon and Elton et al. do not teach semi-conducting layers having similar coefficients of thermal expansion.

Elton '116 teaches that it is well known to form different overlapping insulations with the same coefficient of thermal expansion in order to prevent thermal stress. Thermal stress separates and cracks the materials causing the insulation to fail (see c.7, lines 38-44).

It would have been obvious to one having ordinary skill to modify the winding of Laffoon and Elton such that the insulation and semi-conducting layers had similar or the same coefficients of thermal expansion per Elton '116 since such a modification would have been desirable to prevent failure of the windings caused by thermal aging and cycling.

10. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laffoon and Elton as applied to claim 32 above, further in view of Shildneck (US 3,014,139). Laffoon and Elton do not teach that the stator has a plurality of radial slots having axial cylindrical openings.

Shildneck teaches a large, turbine generator (c.1, lines 13-14) comprising: a stator (core 14, Fig.3); a rotor (not shown, but part of turbine generator); and a high voltage, stator winding including a flexible, current-carrying conductor or cable 1 (Fig.1). The stator core includes plurality of radial slots (defined by slot openings 2a) having axial cylindrical openings 4 (Fig.1), said slots and cylindrical openings having a substantially circular cross section separated by narrower waist portions 5 between the cylindrical openings (Fig.1). The stator winding is wound through the holes in the slots (c.5, lines 56-59). This stator slot construction eliminates the need for slot wedges or other separate slot closing means to prevent the windings from coming out of the slots (c.2, lines 65-67).

It would have been obvious to modify Laffoon and Elton and provide a stator with radial slots and cylindrical openings per Shildneck since this would have been desirable to

eliminate the need for slot wedges or other separate slot closing means to prevent the windings from coming out of the slots.

11. Claim 43 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Laffoon, Elton and Shildneck as applied to claim 42 above, further in view of GB 468,827. Laffoon, Elton and Shildneck disclose the claimed invention as claimed except for the cylindrical openings having a continuously decreasing radius as the slot radius decreases.

GB 468,827 discloses a stator for a machine with slots in the core having cylindrical openings. The radius of the openings decreases as the slot radius decreases. This allows the slots to be closely spaced around the circumference of the core and allows for increasing insulation thickness for the conductors in a radially outward direction. This accommodates the different potentials experienced by the conductors in the machine.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the slots of Laffoon, Elton and Shildneck such that it had a profile of alternating wide and narrow elements, like that shown by GB 468,827, so that the stator core itself provides radial separation of the windings without the need for additional elements. Moreover, this arrangement would allow thicker insulation of the outer conductors to accommodate higher potentials experienced by the outer windings.

12. Claims 32-37, 40-42, 45-46, 49-50, 52-53, 55, 59-64 and 66-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shildneck (US 3,014,139) in view of Elton (US 4,853,565) and Parsons et al. in "Direct Generation of Alternating Current at High Voltages" (Journal IEEE, Sept.1929). Shildneck teaches a large, turbine generator (c.1, lines 13-14), i.e. "high voltage" machine, comprising: a stator (core 14, Fig.3); a rotor (not shown, but part of

turbine generator); and a high voltage, stator winding including a flexible, current-carrying conductor or cable 1 (Fig.1). However, Shildneck's conductor/cable does not comprise inner- and outer-semiconducting layers and an insulation therebetween. Neither is there specific mention of operation of the cable in the range of 36 kV to system voltage.

Elton et al. teaches a high-voltage, electrical cable comprising current-carrying conductors 102 (Fig.7); an inner, semi-conducting "grading" layer 104 made of pyrolized glass fibers (c.7, lines 19-20) surrounding and being in electrical contact with the current-carrying conductor 102; a solid insulation layer 106 surrounding and contacting the inner layer; and an outer layer 110 having semi-conducting properties surrounding and contacting the solid insulating layer 106, as well as being in contact with ground, to thus bleed off static charge and thus prohibiting development of corona discharge (c.7, lines 23-28; lines 64-68). In another form, a predetermined reference potential may be coupled to the semi-conducting layer (c.8, lines 13-21).

It would have been obvious to one having ordinary skill to modify Shildneck's high voltage machine winding and provide a high voltage, electrical cable per Elton et al. with grounded inner and outer semi-conductors separated by an insulator since such a cable would have been desirable to prohibit development of corona discharge.

Regarding the 36 kV-to-system-voltage operating range limitation, while neither Shildneck nor Elton teach specific operating ranges, the cable taught by their combined disclosures would have been capable of use at such voltages. If the prior art structure is capable of performing the intended use, i.e. "configured to operate in an inclusive range of above 36 kV through a system voltage", then it meets the claim.

As support for this assertion, the examiner directs attention to Parsons et al., "Direct Generation of Alternating Current at High Voltages" (Sept.1929). Parsons provides a general background of high voltage generators, including discussion of the advantages of direct-connection of high voltage generators to the grid, without the use of transformers (p.1065 and Section 3), and the financial savings to be gained thereby (Section 4, p.1068-1071). While Parsons is specifically directed to a 33 kV machine, he teaches that high voltage generation "has been increased due to the difficulties which arise with the heavy currents" and "...that if they [the authors] can show sound reasons for generating at a higher voltage, then 66 kV, a voltage recognized as one of the standard transmission voltages, would be the most advantageous" (p.1068). In the design of his generator (Section 6, p.1071), Parsons teaches that with regard to the cable structure and insulation in such high voltage machines, "[a]fter considering different schemes...it occurred to the authors that a concentric type of core conductor, of which knowledge was already available through its application in other directions, might be adopted. By incorporating this type of conductor it became possible to prepare designs with greatly increased phase voltage without increasing the voltage gradient across the winding insulation." The cross-sectional structure of Parson's concentric cable is shown in Fig.3. This concentric design "appears to afford a simple solution of the problem [i.e., of increased voltage gradient]. By its use an alternator can be so wound as to distribute the dielectric stress and to lower its mean value at that part of the machine where there is limited area, and the maximum of heat generation at the regions adjacent to the stator bore. In the designs of alternators for voltages of 33 kV and 44 kV between phases, there is sufficient

margin to permit insulated conductor bars to be used with thicknesses of insulation not exceeding those of which experience has proved satisfactory" (p.1071).

This basic concentric design is incorporated by Elton in his cable 100 (Fig.7), where the internal and external semi-conductive layers 104/110 are concentrically arranged around the conductor strands 102 to equalize the electric charge thereabout and around the exterior of the cable (c.7, lines 12-17). Thus, while not explicitly stated by Elton, operation of the cable at voltages greater than 36 kV is contemplated since a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use---as Shildneck and Elton's concentric cable is---then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

13. Claims 38 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shildneck, Elton and Parsons, as applied to respective claims 32 and 61 above, and further in view of Elton et al. (US 4,622,116). Shildneck, Elton and Parsons do not teach semi-conducting layers having similar coefficients of thermal expansion.

Elton et al. (US '116) teach that it is well known to form different overlapping insulations with the same coefficient of thermal expansion in order to prevent thermal stress. Thermal stress separates and cracks the materials causing the insulation to fail (see c.7, lines 38-44).

It would have been obvious to one having ordinary skill to modify the winding of Shildneck, Elton and Parsons such that the insulation and semi-conducting layers had similar or the same coefficients of thermal expansion per Elton et al. (US '116) since such a modification would have been desirable to prevent failure of the windings caused by thermal aging and cycling.

14. Claim 43 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Shildneck, Elton and Parsons, further in view of GB 468,827. Shildneck, Elton and Parsons disclose the claimed invention as claimed except for the cylindrical openings having a decreasing radius as the slot radius decreases.

GB 468,827 discloses a stator for a machine with slots in the core having cylindrical openings. The radius of the openings decreases as the slot radius decreases. This allows the slots to be closely spaced around the circumference of the core and allows for increasing insulation thickness for the conductors in a radially outward direction. This accommodates the different potentials experienced by the conductors in the machine.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the slots of Shildneck, Elton and Parsons such that it had a profile of alternating wide and narrow elements, like that shown by GB 468,827, so that the stator core itself provides radial separation of the windings without the need for additional elements. Moreover, this arrangement would allow thicker insulation of the outer conductors to accommodate higher potentials experienced by the outer windings.

Allowable Subject Matter

15. Claims 39, 44, 51, 54 and 56-58 would be allowable if rewritten to overcome the objections and rejection(s) under 35 U.S.C. 112, first and second paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Regarding claim 39, the prior art does not fairly teach or suggest that the cable conductor comprises a plurality of conductive elements, selected ones of said plurality of conductive elements being insulated from each other, and selected other ones of said plurality of conductive elements being uninsulated in order to effect contact with the inner layer. There is no teaching or suggestion in Laffoon, Elton and Shildneck to combine insulated and uninsulated conductor elements so that some uninsulated conductors contact the inner layer. Laurell teaches plural conductors (Fig.2), but each is insulated by insulation 2. There is no teaching or suggestion that some conductors are insulated, and some are not insulated.

Regarding claim 44, GB 468,827 teaches continuously decreasing radius of the cylindrical openings and slot radius decreases. There are no discontinuities in radius relative to slot radius.

Regarding claim 51, neither Laffoon, Elton, Shildneck nor Parsons teach that their cable's outer semi-conducting layer is severed at a plurality of locations forming a plurality of parts separately connectable to earth potential.

Regarding claim 54, as with claim 39 above, there is no teaching in Laffoon, Elton, Shildneck, Parsons or Laurell that the conductive elements of the current-carrying conductor comprise at least one of non-insulated and insulated wires, stranded into a plurality of layers.

Regarding claim 56, Laffoon teaches different system level voltages such as 33 and 66 kV, but does not teach that his machine may be "selectively connectable" to such a plurality of

system level voltages. Rather, it appears Laffoon teaches only one system level voltage. The remaining prior art does not teach plural system level voltages or selective connection of the machine cable thereto.

Similarly, with regard to claims 57-58, Laffoon nor the prior art teaches plural separate tappings for the windings to connect to different system voltage levels, or that each "separate winding" [sic] connects to the system voltage level.

Response to Arguments

16. Applicant's arguments with respect to claims 32-70 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
9 October 2003